IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. - 16. (Canceled)

17. (Currently Amended) A system of vacuum and pollution-free arsenic extraction, comprising:

a smelting device;

a constant temperature crystallization device, fixed on the smelting device through a demountable device, wherein an interior smelting chamber of the smelting device is connected to a crystallization chamber of the constant temperature crystallization device so that arsenic vapor generated from ore concentrate in the smelting device can crystalize in the crystallization chamber and produce arsenic;

an automatic deslagging device, connected to a bottom of the smelting device so as to conduct deslagging, wherein the smelting device, the constant temperature crystallization device, and the automatic deslagging device each have a vacuum sealing in between;

a dust collection device, connected to the constant temperature crystallization device through a dust collection inlet pipe;

a vacuum measuring device and a vacuum extraction device, the vacuum extraction device being connected to the dust collection device through a pipe equipped with the vacuum measuring device to measure a system vacuum degree, so that arsenic sulfides volatilized from the ore concentrate in the smelting device are drawn into the dust collection device through the crystallization device by the vacuum extraction device;

induction heating equipment, having an inductor arranged on the smelting device, so as to heat the smelting device and the crystallization device to predetermined temperatures; and

an automatic temperature control device, having thermal couples respectively mounted on the smelting device and on the constant temperature crystallization device, so as to control the temperatures of ~~the~~ both devices.

18. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 17, wherein the smelting device comprises:

a crucible formed by a detachable bottom, a cover, and a wall;

a vacuum furnace shell assembled outside the crucible; and

a hollow collecting and exhaust pipe vertically mounted at a center of the crucible bottom,

wherein

an interior wall of the crucible and an exterior wall of the collecting and exhaust pipe form the smelting chamber, which connects to the crystallization chamber through a top of the collecting and exhaust pipe,

a plurality of downward slant holes are distributed on a wall of the collecting and exhaust pipe, and

a vapor drainage pipe is also installed under the collecting and exhaust pipe, which crosses the crucible bottom and connects with an exhaust fan.

19. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 18, wherein a centerline of each slant hole of the collecting and exhaust pipe and a centerline of the collecting and exhaust pipe are in the same plane and form a 20-40 degree bevel with a lower end face of the collecting and exhaust pipe.

20. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 18, wherein the crucible is made of corrosion proof and heat conducting material.

21. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 20, wherein the crucible is made of graphite.

22. (Currently Amended) A system of vacuum and pollution-free arsenic extraction as in Claim 18, wherein the inductor of the induction heating equipment is an intermediate frequency inductor, and the intermediate frequency inductor is in an integral cast in the insulating materials and is assembled in the vacuum furnace shell outside the ~~above mentioned~~ crucible, the induction heating equipment also including intermediate frequency power, a capacitor for an electric induction heating system, and an intermediate frequency isolating transformer, the intermediate frequency isolating transformer being connected between an electric input end of the intermediate frequency inductor and the intermediate frequency power.

23. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 18, wherein the inductor of the induction heating equipment is an intermediate frequency inductor and the inductor is assembled outside the vacuum furnace shell, the induction heating equipment also including intermediate frequency power and a capacitor for an electric induction heating system.

24. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 23, wherein the vacuum furnace shell is made of a high temperature resistant, insulating, non-magnetoconductive, non-conducting, and non-leakage material.

25. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 24, wherein the vacuum furnace shell is made of ceramic or 4-fluorothene plastic wire mesh.

26. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 23, wherein insulating material is used to block a gap between the crucible wall and the vacuum furnace shell.

27. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 17, wherein the constant temperature crystallization device comprises:

a bottomless shell;

an inner shell;

a plurality of multi-hole crystallization plates installed on one support; and

a center heating pipe installed on the bottomless shell and extending at a vertical

direction in a center of the shell,

wherein a space in the inner shell forms the crystallization chamber, and the inner shell and a support of the multi-hole crystallization plate are fixed together with the bottomless shell through a dismountable device.

28. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 27, wherein a small annular slit exists between the bottomless shell and the inner shell of the constant temperature crystallization device, and a bottom of the annular slit is plugged with refractory materials.

29. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 17, wherein the automatic temperature control device comprises:

a thermal couple inserted on a crystallization chamber shell for measuring temperature in the crystallization chamber;

a thermal couple inserted at a furnace bottom for measuring the temperature of the smelting chamber; and

a temperature controller connected to the thermal couples and the induction heating equipment through a compensation cord for respectively controlling the temperature in the furnace and the crystallization chamber.

30. (Currently Amended) A system of vacuum and pollution-free arsenic extraction as in Claim 17, wherein

the smelting device is installed above ground through a support,

the smelting device further comprises a furnace bottom fixed to a crucible bottom,

and

the automatic deslagging device comprises a hopper, a slag car, and a hydraulic lift installed on the hopper, in which a furnace bottom is connected to a vacuum furnace shell through a top support of a hydraulic lift ~~(2)~~, between which vacuum sealing strips are used for vacuum sealing, and, upon lowering, the hydraulic lift can separate the furnace bottom and the crucible bottom from a crucible wall.

31. (Previously Presented) A system of vacuum and pollution-free arsenic extraction as in Claim 30, wherein a layer of heat insulation material is arranged between the crucible bottom and the furnace bottom.